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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,745	01/02/2002	Robert Jackson	FOC1100-1	2978

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EXAMINER

NGUYEN, NGOC YEN M

ART UNIT PAPER NUMBER

1754

DATE MAILED: 06/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/038,745

Applicant(s)

JACKSON, ROBERT

Examiner

Ngoc-Yen M. Nguyen

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-8 and 32-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-8 and 32-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 11, 2006 has been entered.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 32, 36, 40-43 are rejected under 35 U.S.C. 102(b) as being anticipated by GB 825,185.

GB '185 discloses that fluorine can be generated in a electrolytic process and the fluorine can be purified by passing through sodium fluoride traps to remove hydrogen fluoride impurity (note claim 1). In general practice, two units, i.e. traps, are employed, one serving to absorb the hydrogen fluoride and the other is being regenerated (note page 2, lines 74-77).

GB '185 does not specifically disclose a switching mechanism for switching the gas flow from one trap to the other trap, however, since GB '185 teaches two traps are

used, and when the first trap is being generated in-situ the second trap is in service, thus, there must inherently be at least a switching mechanism in GB '185 in order to switch to that the first trap can be put in service while regenerating the second trap.

The apparatus as disclosed in GB '185 anticipates the claimed apparatus.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-8, 32-41, 43, 45-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over of GB 825,185, in view of Madan (4,469,715) optionally further in view of Hoffman et al (5,785,820).

GB '185 discloses a set up as mentioned in the above rejection to purify fluorine gas, which was generated in an electrolytic process.

For the auxiliary equipment or manifold arrangement to support the operation of the traps, it would have been obvious to one of ordinary skill in the art to select appropriate auxiliary equipment or manifold arrangement to obtain the desired purification of the gas by passing it through the trap.

The difference is GB '185 does not disclose that the fabrication tool.

Madan '715 discloses a process for producing an amorphous layer of p-type semiconductor alloy in which a fluorine source (60) is used (note claims 1 and 4).

Art Unit: 1754

Madan '715 further discloses that the molecular fluorine source (60) is converted to activated fluorine and used in a plasma-generating unit (note column 6, lines 40-67).

Optionally, Hoffman '820 can be applied to teach that for semiconductor processes, the purity of any chemicals used is required to be extremely high (note column 1, lines 38-60). In order to prevent contamination, which may be caused by storage or handling, the chemicals are produced on-site (note column 3, lines 28-34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use have the purifying system for fluorine gas as disclosed in GB '185 on-site of the semiconductor service as suggested by Madan '715 because pure fluorine is required for such process and because Hoffman '820 teaches that by having the chemicals produced on-site would prevent contamination caused by handling and transportation.

Claims 1-4, 6-8, 32-41, 43, 45-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madan (4,469,715) in view of Lagow et al (3,904,501), Miller (5,744,022) and Coneney (3,731,495), optionally further in view of Hoffman et al (5,785,820).

Madan '715 is applied as stated in the above rejection.

The differences are Madan '715 does not disclose that (1) the fluorine gas was produced by an electrolytic cell and purified before used and (2) there are two traps which are arranged in parallel.

Lagow '501 discloses a process for preparing carbon monofluoride comprising contacting a source of carbon with fluorine plasma (note claim 1). Fluorine gas is used as the source of activated fluorine atoms. Preferably the fluorine gas has a high purity to maximize the yield of activated fluorine atoms (note column 3, lines 41-44). Before the fluorine is used, it is passed through a sodium fluoride trap to remove hydrogen fluoride from the fluorine gas (note column 4, lines 40-49).

It would have been obvious to one of ordinary skill in the art to purify the fluorine gas in the process of Madan '715 by passing the fluorine gas through a sodium fluoride trap because Lagow '501 suggests that the removal of hydrogen fluoride is desired before using molecular fluorine to generate activated fluorine in a plasma generating chamber.

Miller '022 is applied to teach that it is known and conventional in the art to use an electrolytic cell to produce high purity fluorine (note column 2, lines 10-11).

Hoffman '820 can be applied to teach that for semiconductor processes, the purity of any chemicals used is required to be extremely high (note column 1, lines 38-60). In order to prevent contamination, which may be caused by storage or handling, the chemicals are produced on-site (note column 3, lines 28-34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to produce (by using an electrolytic cell as suggested by Miller '022) and purify (by using a sodium fluoride trap as suggested by Lagow '501) a fluorine source on-site for the semiconductor process of Madan '715 in order to prevent contamination as suggested by Hoffman '820.

Art Unit: 1754

For (2), Coveney '495 discloses an apparatus for air separation, in which multiple adsorbent traps are used. These traps are arranged so that one is used for impurity adsorption and one is simultaneously regenerated (note claim 18).

It would have been obvious to one of ordinary skill in the art to arrange multiple sodium fluoride traps in parallel for the invention of Madan '715, as suggested by Coveney '495 because by doing so, one trap can be used to remove the HF impurity while the other can be regenerated and this would allow the removing step to be carried out continuously without interruption for regeneration step.

For the auxiliary equipment or manifold arrangement to support the operation of the traps, it would have been obvious to one of ordinary skill in the art to select appropriate auxiliary equipment or manifold arrangement to obtain the desired purification of the gas by passing it through the trap.

Claims 42, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madan '715 in view of Lagow '501 and Coveney '495, optionally further in view of Hoffman '820 as applied to claims 1-4, 6-8, 32-41, 43, 45-49 above, and further in view of George (5,137,047).

Coveney '495 clearly teaches the step of regenerating the sodium fluoride trap by flow of heated nitrogen-rich purge gas there through (note claim 18). Coveney '495, however, does not disclose a means to pull vacuum on the sodium fluoride trap.

George '047 discloses that sodium fluoride in a trap can be regenerated by heating the bed to high temperature while running a vacuum pump (note column 4, lines 40-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regenerate a sodium fluoride trap of Torisu '600 at high temperature under vacuum by running a vacuum pump as suggested by George '047 because such set up is known and conventional in the art. Without a showing of criticality or unexpected results, the use of a known apparatus to regenerate sodium fluoride trap as required in the instant claims is not seen as a patentable difference.

Claims 42, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB '185 in view of Madan '715 and optionally further in view of Hoffman '820 as applied to claims 1-4, 6-8, 32-41, 43, 45-49 above, and further in view of George (5,137,047).

GB '185 teaches that the regenerating step is carried out by heating the adsorbent to a temperature range of 200-400°C (note page 2, lines 43-48).

GB '185 does not disclose a means for pulling vacuum for regenerate the adsorbent.

George '047 is applied as stated in the above rejection to suggest the use of such means.

Applicant's arguments filed April 11, 2006 have been fully considered but they are not persuasive.

Art Unit: 1754

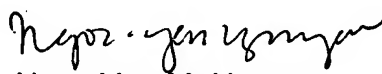
The rejection over Torisu '600 is withdrawn in view of the Declaration filed April 11, 2006.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stanley Silverman can be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 or (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed (571) 272-1700.


Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1754

nmn
June 17, 2006